

FRANKLIN MAKING MONEY MORE PLENTIFUL

ERIC P. NEWMAN

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FRANKLIN MAKING MONEY MORE PLENTIFUL

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(Read November 13, 1970)

THE PAPER MONEY of the American Colonies has the unique distinction of being the first authorized governmental paper money in the Western World. No European government had undertaken that practice when the experiment began in America in 1690. The theories as to the proper regulation of such issues to protect their purchasing power or their relationship to a specie standard were as diverse then as they are today. By the time Pennsylvania issued its own paper money in 1723 seven other colonies had already done so. Four of those colonies had required their issues to be secured by mortgage loans principally on land within the colony and Pennsylvania issued its first paper money on that basis.¹ By 1729 in Pennsylvania there was a difference of opinion as to whether an additional issue should be authorized. Benjamin Franklin, then twenty-three years of age, wrote a pamphlet entitled "A Modest Inquiry into the Nature and Necessity of a Paper Currency," exposing the selfish reasons of the opposition and explaining the general economic benefits to the common man and to the industrial development of the colony. He added a specie flavor to the Loan Office paper money by urging that "bills issued upon land are in effect coined land." The tract was so convincing that Pennsylvania promptly authorized a new issue. Not only was Franklin's philosophic, economic and literary ability then recognized but an opportunity for government printing work opened up for him.² As an employee of Samuel Keimer in 1728 Franklin had already had experience in printing paper money for New Jersey, having cut and cast ornaments to set with the type and having built and operated the press. His first independent printing contract for paper money was for the Pennsylvania issue of 1731. By the time his printing career had ended in 1764 he and the Franklin and Hall part-

nership had printed fifteen issues of Pennsylvania paper money totaling almost 2,000,000 pieces, nine issues for Delaware totaling over 250,000 pieces, and three issues for New Jersey totaling over 200,000 pieces—which after adding the customary 2 per cent for spoilage, aggregate about 2,500,000 notes (table 1).

METHODS OF PRINTING PAPER MONEY

Franklin, as one would expect, was a master in printing paper money in the most efficient manner, minimizing the amount of paper and labor used. The denominational requirements set by the Acts authorizing paper money were based upon circulation needs and customarily provided for different quantities of the various denominations of an issue. In Pennsylvania and Delaware, where Franklin steadily secured the money-printing contracts, eight denominations were usually specified by the Act. His paper stock was of a size that permitted eight faces and eight backs to be printed on one side of one sheet. When such a sheet was laid on

TABLE 1

3. Colony	Date	Face Value	No. of Bills*	Remarks
New Jersey	1728	24,760	48,200	Working for Keimer
New Jersey	1737	50,000	126,250	
New Jersey	1746	16,000	40,400	
Delaware	1734	12,000	35,400	Number estimated
Delaware	1739	6,000	49,400	Number estimated Franklin & Hall
Delaware	1746	20,000	43,333	
Delaware	1753	3,000	24,700	
Delaware	1756	2,000	5,900	" "
Delaware	1758	4,000	11,800	" "
Delaware	1758	8,000	23,600	" "
Delaware	1759	27,000	58,500	" "
Delaware	1760	4,000	2,286	" "
Pennsylvania	1731	40,000	75,000	Franklin & Hall
Pennsylvania	1739	80,000	164,000	
Pennsylvania	1744	10,000	92,000	
Pennsylvania	1746	5,000	92,625	
Pennsylvania	1749	5,000	226,667	
Pennsylvania	1755	10,000	102,250	
Pennsylvania	1756	55,000	185,000	
Pennsylvania	1756	30,000	48,000	
Pennsylvania	1757	45,000	72,000	
Pennsylvania	1757	55,000	88,000	
Pennsylvania	1758	100,000	209,145	
Pennsylvania	1759	100,000	60,000	
Pennsylvania	1759	36,650	9,774	" "
Pennsylvania	1760	100,000	103,036	" "
Pennsylvania	1764	55,000	440,500	" "
Totals		£903,410	2,437,766*	

* Excludes customary 2 per cent excess to cover spoilage.

¹ Eric P. Newman. *Early Paper Money of America* (Racine, 1967), pp. 7-9.

² Matt H. Rothert, "Franklin on the Necessity of a Paper Currency," *The Numismatist* 69 (1956): pp. 1354-1356. See *Autobiography of Benjamin Franklin*.

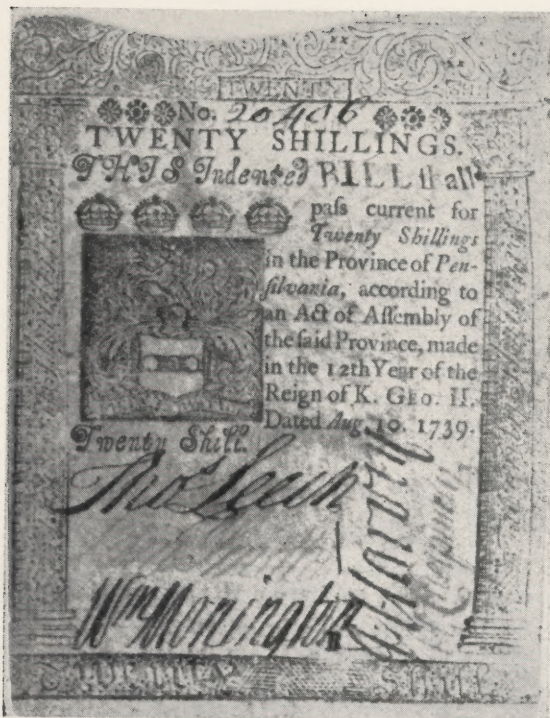


FIG. 1. Face of 1739 Pennsylvania 20 shilling note showing deliberate Pennsylvania misspelling to prevent raising denominations by alteration.

the press for printing, two nails pierced the center of the long sides near the edge. After one side was printed and hung up to dry the ink, the opposite side would be put back on the press using the nail holes for registry and having been rotated so that the faces would be opposite the previously printed backs and vice versa. Thus one printing press could print sixteen two-sided notes on one sheet from type locked in a single chase. However, the logistics of printing different quantities of each denomination without waste required the make-up for one denomination to be substituted for another and sometimes for two, three, or four make-ups for one denomination to be prepared with identical cuts, ornaments, and type. As many as seven different sheet layouts might be necessary to print one issue without waste. Sometimes Franklin would find it practical to use half sheets of paper which would hold only four faces and four backs. He, personally, counted and checked the money he printed and was disturbed about a miscount of the 1753 Delaware issue because the boat scheduled to make the

delivery down river set sail without giving him time to recount.³

ALTERATION AND COUNTERFEITING

The most severe problem facing an eighteenth-century money printer was the alteration and counterfeiting of his products. Methods then used to combat such frauds were generally unsuccessful. The alterations usually consisted of raising the value of a note by eradicating the denominational portions and either drawing in or pasting on a higher value. This could only be done one piece at a time and required the use of genuine notes as a base. It was a common occupation of colonial rascals in the evening. Franklin continued accepted practices to prevent alteration but added one curious countermeasure by spelling the name of the Province of Pennsylvania in four different ways—with one or two *n*'s in the first syllable and with an *i* or *y* in the second syllable. Each high denomination had a different spelling so that a raised note might be easily detected by the inconsistent spelling. This might have been helpful to a Colonial cashier, but since the public was not told the key it was a pointless secret from 1755 through 1776.⁴

Counterfeiting was a much more dangerous menace because once a false plate had been engraved or false type had been set, quantities of forgeries could be produced on a press. This could be done more safely in Europe or in a colony other than that of issue. Benjamin Franklin as a boy in Boston had originally been a printer's apprentice to his brother James. In 1728 James tried to convince the Rhode Island Assembly that notes printed from set type and special ornaments were more difficult to counterfeit than those printed from engraved plates. Benjamin Franklin agreed with this conclusion and all of the notes he printed were a combination of set type with special vignettes and ornaments. To deter counterfeiting, Franklin used many of the type fonts on hand in his shop, so that one bill might have a mixture of old Brevier, small Pica, Old English, Great Primer, crooked letters, flowers, planets, home-made ornaments, etc.⁵ One of his greatest inven-

³ *Papers of Benjamin Franklin*, ed. Leonard W. Labaree (New Haven, 1961) 4: p. 456.

⁴ Eric P. Newman, *Early Paper Money of America* (Racine, 1967), pp. 240-259.

⁵ See: C. William Miller, "Franklin's Type: Its Study Past and Present," *Proc. Amer. Philos. Soc.* 99 (1955): pp. 418-432; *Papers of Benjamin Franklin*, ed. Leonard W. Labaree (New Haven, 1969-1970) 13: pp. 60 and 99, also 14: p. 17.

tions, however, was the adaption of the nature-printing technique to the production of lead printing plates as an anticounterfeiting device.

NATURE-PRINTING

Nature-printing is the production of a printed image of a natural object from the object itself. Leonardo da Vinci had done this by the end of the fifteenth century, by rolling ink on a botanical specimen and transferring the image to paper by contact. In Philadelphia from 1731 through 1742 Joseph Breintnall, a friend of Franklin, was making such prints of superb quality for botanical purposes.⁶

Franklin realized that no leaf was identical with another and therefore any leaf he might select could not be perfectly duplicated. He also knew that the veins in leaves are of tapering thickness making it impossible for an engraver to copy them well. He recognized that the complexity of leaf surface structure was ideal for preventing counterfeiting if a natural leaf design could be printed on a piece of paper money. The only problem he faced was how to do it. Electrotyping, acid engraving, lithography, and photography were not to be developed for years into the future. Franklin invented a way, and kept it a secret. It was related to stereotyping.

Stereotyping was discussed in Europe in the early part of the eighteenth century because of the large quantity of lead type needed to set a long book. There was also a need to keep type standing for reprintings or revisions. It was realized that, if a negative of an entire page of type could be made in one piece and a positive casting made from it, the individual letters and figures would immediately be released for re-use. The idea for such a stereotype merely needed to be accomplished technically. The difficulty was that a large negative of set type could only be precisely formed with plaster and the subsequent pouring of hot lead into the plaster cast would break it. During Franklin's early trips to England to advance his knowledge of printing, he probably learned of this problem. He apparently never met William Ged of Edinburgh, who made one such stereotype page in 1725 in London and worked on the problem thereafter. In 1736 Ged achieved his goal by completing all of the stereotype plates for the classical work entitled *On the Gods and the World* by Sallustius Crispus. This book was finally

⁸ Eric P. Newman, "Nature Printing on Colonial and Continental Currency," *The Numismatist* 77 (1964): pp. 147-154, 200-305, 457-465, 613-623.

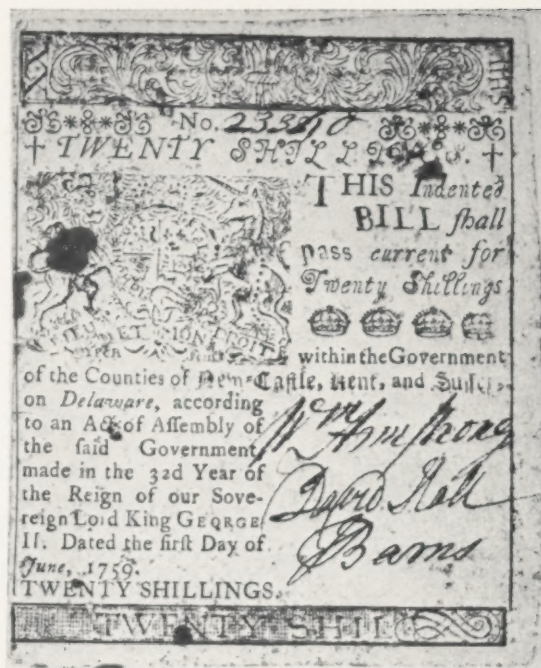


FIG. 2. Face and back of 20 shilling 1759 Delaware currency showing Franklin's use of a nature print, an engraved cut, ornaments and set type from various fonts to deter counterfeiting.



FIG. 3. Identical nature and cloth prints showing nail holes for mounting lead casting as well as unbroken and broken upper right corners.

printed in 1739 and unfortunately, proved that stereotyping was impractical for that era.

Franklin, in his *Pennsylvania Gazette* of November 11, 1736, was proud to advertise his publication of *Poor Richard's Almanac* for 1737 as containing "a particular Description of the Herb which the Indians use to cure the Bite of that venomous Reptile a Rattle-Snake" and "an exact Print of the Leaf of the Plant." In the almanac Franklin had printed a perfect reproduction of a rattlesnake leaf for educational purposes, but little did his readers realize the process of reproduction he had used.

From an examination of the leaf prints on the back of paper currency printed by Franklin and his successors it is evident that a lead plate was used for printing that part of the back. On the 10-shilling Pennsylvania notes there are small white dots near the lower left and upper right corners of the birch leaf print. On some examples the upper right corner of the print shows a defect. The dots are obviously holes caused by nailing a lead plate to a wood block and the corner defect was clearly caused by such a nail breaking off the corner of the plate. In the background of the leaf design is a perfect image of a piece of cloth, the irregularities in the thread and in the weaving being very evident. Some of the cloth faintly shows through portions of the leaf design. Since the high portions of the leaf and cloth are the black portions of the print a transfer through a negative had to be made to reproduce the design. The high points of the leaf and cloth had to be on the same levels for a flat uniform printing impression to be made. Since no other printer seems to have made plates of this type except those Franklin had instructed under a pledge of secrecy, the process of making the plates must be reconstructed by assuming the use of material available to him.⁶

Wet paper or wet earth must have been placed in a small shallow container and pressed flat. Then a wet piece of fabric was laid on that surface. A fresh leaf or sprig then was laid on the cloth. A flat block of wood was pressed or tapped against the top surface of the leaf and the exposed part of the cloth, forcing the leaf down to the level of the cloth surrounding it. To make a pure plaster negative of this combination was simple but the problem was to make a negative of this size strong enough not to fracture from the heat, when a lead positive was made from it. Franklin must have first added brick dust, pulverized

asbestos, or refractory clays to the plaster and after it had set he could have baked out much of the moisture in the mold. The negative mold was then used to cast a thin positive lead plate from which the leaf and cloth design could be printed.⁷ Additional castings were usually taken from the same negative for multiple or substitute usage. Thus a three-dimensional natural object could be reproduced with fully accurate detail by letter-press printing in the eighteenth century.

Franklin's first leaf prints had no background of cloth. Several leaves were sometimes put in one design and even a portion of a leaf or a section of a fruit or pod was added. His nature-print lead plates remained in use on issue after issue of the paper money of Pennsylvania and Delaware. He allowed his friends, James Parker and Isaac Collins, to continue to use his process on New Jersey paper money and he arranged for Jonas Green and his family to use the invention on Maryland issues.

To establish that Franklin introduced the nature-printing plate technique prior to August, 1736, on the New Jersey paper money dated March 25, 1737, is complicated by the fact that no examples or design detail of that issue are known. All issued notes were apparently redeemed and destroyed prior to the expiration of their validity on September 25, 1753. However, notes amounting to £5,000 of the £40,000 authorized for that issue were originally turned over to Robert Hude to complete their signing and to exchange for torn or ragged notes. In 1772, after Hude's death, 2,724 notes including all eight denominations were found in his papers, some fully signed and some partially signed. They were promptly burned by order of the New Jersey Provincial Council,⁸ eliminating that evidence.

Fortunately the *Pennsylvania Gazette* of November 15, 1744, carried "A Caution to the Publick" that counterfeit one-shilling notes of New Jersey were passed in Philadelphia and, in describing how to detect them, stated that "some of the Bills have an Impression of a Sage Leaf, ill done upon their backs."⁹ The date of the issue was not mentioned, but the last New Jersey issue before the warning was dated March 25, 1737. The next preceding issue dated March 25, 1733, was



FIG. 4. Back of 1739 Pennsylvania 20 shilling note showing nature print and B. Franklin as printer.

printed by Andrew Bradford and neither it nor prior issues had printed backs. Thus the only issue to which the mention of the sage leaf could refer was that dated March 25, 1737.

Since *Poor Richard's Almanac* for 1737 containing the nature print of the rattlesnake leaf was advertised as completed on November 11, 1736, the use of the nature-printing plate technique on New Jersey paper money preceded it.¹⁰ When Franklin commented, on August 2, 1736, that he was "at Burlington with the Press labouring for the Public Good, to make Money more plentiful,"¹¹ he was therefore introducing his secret nature-printing plate technique to the world.

Nature prints had given such major protection to the currency issues of the four colonies which used them that the practice was adopted for the first money of the United Colonies at the outbreak of the American Revolution. There was no time for new nature prints to be made so those on

⁷ Experiments conducted by Ivy N. Steele, Chicago, Illinois.

⁸ *New Jersey Archives*, First Series, 18: pp. 340, 343-344.

⁹ *New Jersey Archives*, First Series, 12: pp. 242-243.

¹⁰ *Papers of Benjamin Franklin*, ed. Leonard W. Labaree (New Haven, 1960) 2: p. 161.

¹¹ *Papers of Benjamin Franklin*, ed. Leonard W. Labaree (New Haven, 1960) 2: p. 159.

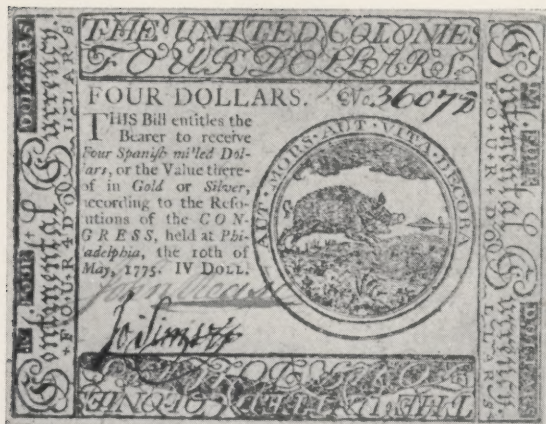


FIG. 5. Face of typical \$4 Continental Currency issue showing emblem and motto symbolizing the determination of the Americans.

hand at Hall & Sellers had to be put into service. Some selected nature prints had not been used since 1755 on Pennsylvania money, and others had never before been used because of their poor quality. One nature print with the value of five shillings engraved into it was used on the back of several issues of five-dollar notes.⁶ These nature prints and others subsequently made were consistently used to protect the Continental Currency throughout its life, but the British had determined to counterfeit these American issues into worthlessness¹² and would have done so if the Americans had not been forced to issue their paper money in such quantities that it depreciated to no value without such assistance. After Franklin's death the nature-printing plate art was apparently never used again.

ONE UNIFORM PAPER CURRENCY

In its statutory regulation of American paper currency, England prohibited any further issues with legal tender status as to New England in 1751 and as to all colonies in 1764. This was the result of extensive inflation in some colonies, although there was little fluctuation in the value of the Pennsylvania, New Jersey, and Delaware paper money which Franklin had printed. Anonymously opposing both the 1764 Currency Act and the 1766 Stamp Act, Franklin urged that one uniform paper currency with mortgage loan security be established for the American colonies

¹² Eric P. Newman, "Counterfeit Continental Currency Goes to War," *The Numismatist* 70 (1957): pp. 5-16, 137-147.

as a whole in lieu of separate paper money for each colony. He opposed interest-bearing money and favored sinking-fund redemption through taxes.¹³ His ideas were first ignored in England by the representatives of the Crown, were then deemed too radical, and in due course were viewed as too conservative by his fellow Americans. By 1767 his authorship of these proposals was disclosed but none of his efforts met fruition until the American Revolution enabled the Continental Congress to issue for the first time a uniform paper currency for all American Colonies.

POOR RICHARD'S MOTTOES

Those publications which Franklin wrote or edited demonstrated his belief in influencing human conduct with philosophic truisms and stimulating mottoes. Poor Richard's sayings required Franklin to seek compilations of such material in European publications. During the Colonial period the Crown would not have permitted any-

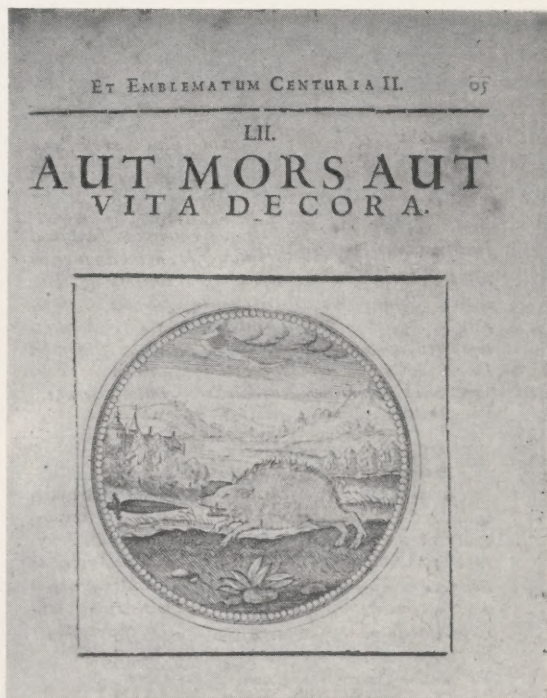


FIG. 6. Page from an emblem and motto book in Benjamin Franklin's library showing source of design used on \$4 Continental Currency.

¹³ *Papers of Benjamin Franklin*, ed. Leonard W. Labaree (New Haven, 1969-1970) 13: p. 207; also 14: pp. 32 and 77.

one to enliven paper money with such philosophy, but, when the American Revolution began, the paper money of the Continental Congress bore an emblem and motto on the face of each bill, differing on each of the denominations. Numismatists suspected that Franklin, being one of the committee of five appointed to prepare paper money, might have participated in the emblem and motto matter, but until a few years ago nothing about those devices had been located. It was known that Francis Hopkinson had unsuccessfully claimed a quarter-cask of public wine as extra compensation from the government for developing seven unidentified devices for the currency. Because of Franklin's connection with the currency the present writer in 1964 asked Edwin Wolf 2nd, Philadelphia bibliophile, what emblem- and motto-books happened to be in Philadelphia in 1775. The reply not only named books on emblems and mottoes by Joachim Camerarius and by Diego Saavedra, but also stated that several of them still retained Franklin's handwritten shelf marks. The inclusion in those books of all of the emblems and mottoes used on 1775 Continental Currency

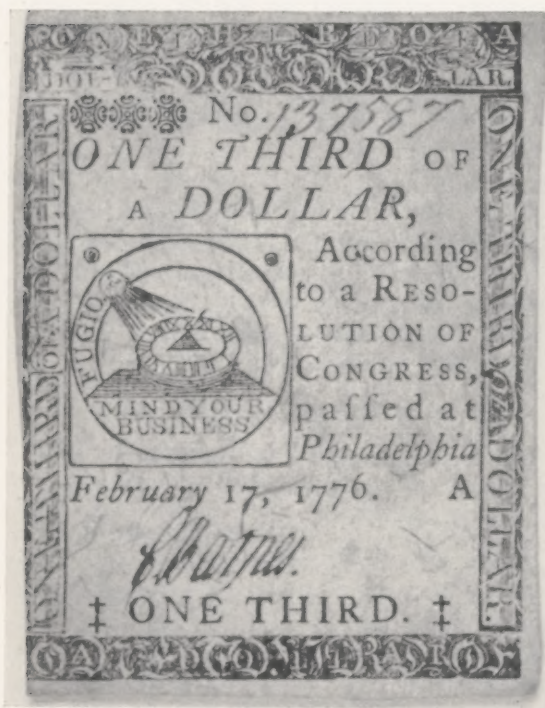


FIG. 7. Face of February 17, 1776, Continental Currency fractional issue containing rebus developed by Benjamin Franklin.



FIG. 8. Back of February 17, 1776, Continental Currency fractional issue containing patriotic emblem of the 13 colonies interlocked in a continuous chain of unity.

indicated that Franklin had been the source. Poor Richard had been at it again. In 1776 two new devices appeared on the fractional currency issue. The device on the face was a rebus, "Time flies so Mind Your business." In 1758 Poor Richard had used a similar saying which might be even more applicable today, namely, "In a Corrupt Age the Putting the World in Order Would Breed Confusion, Then e'en Mind Your Own Business." In 1748 he had said "Lost time is never found." The device on the back of the fractional notes was a continuous circular chain of thirteen links with the motto, "American Congress We are One." These two devices must have pleased Franklin particularly and the designs were again used on the proposed 1776 Continental Currency coinage pattern and on the first official copper coinage of the United States in 1787.¹⁴ It has been further recommended for use on coin or paper money to be issued in commemoration of the Bicentennial of the Independence of the United States in 1976.

¹⁴ Eric P. Newman, "Sources of Emblems and Mottoes on Continental Currency and the Fugio Cent," *The Numismatist* 79 (1966): pp. 1587-1598.

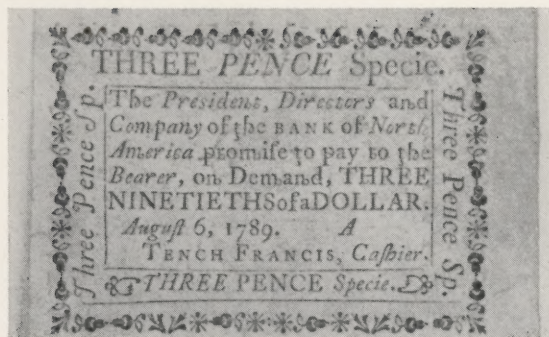


FIG. 9. Bank of North America 3 pence (Pennsylvania currency) specie change note suggested by Benjamin Franklin.

Franklin's mission to France, beginning October 27, 1776, did not prevent him, in 1779, from suggesting many mottoes for contemplated copper coinage of the United States. He wanted "some important proverb of Solomon, some pious, moral, prudential or economical precept, the frequent inculcation of which on seeing it every time one receives a piece of money might make an impression upon the mind." He wanted other coinage designs to show "different species of barbarity with which the English have carried on the War in America, expressing every abominable circumstance of their cruelty and inhumanity."¹⁵ Unfortunately, the copper coinage program was abandoned and his unusual suggestions could not be considered.

ADDITIONAL IDEAS FOR COINAGE

Franklin's influence is also present in the symbols which appeared on the first coinage of the United States Mint in 1793. On the cents and half-cents the female Liberty Head with flowing hair and the French Liberty Cap on a pole, were copied from the 1783 *Libertas Americana* medal designed by Augustin Dupré in France at Franklin's instigation. Originally Franklin had suggested the theme for this victory medal in a letter to Robert R. Livingston dated at Passy on March 4, 1782, and after arranging for its preparation Franklin sent examples of the medal to Livingston on April 15, 1783, for Congressional approval.¹⁶ Thus Franklin's suggestions for design affected the coinage of his country three years after his death.

¹⁵ Eric P. Newman, "Poor Richard's Mottoes for Coins," *The Numismatist* 69 (1956): pp. 1363-1367.

¹⁶ Elston G. Bradfield, "Benjamin Franklin, a Numismatic Summary," *The Numismatist* 69 (1956): p. 1351.

The cost of the preparation of dies for medals awarded by Congress for heroism troubled Franklin. He felt that medals of this kind should be prepared in such a size that the dies might subsequently be used for minting regular United States coinage in copper and silver, thus spreading the cost of the dies over a much larger issue.¹⁵

CURRENCY DEPRECIATION AS A TAX

Franklin accepted the collapse in value of Continental Currency as one of the costs of the War of Independence. When this paper money was approaching worthlessness in 1781 he pointed out in *Of the Paper Money of the United States of America*: "Paper Money not being easily receiv'd out of the Country that makes it, if the Quantity becomes excessive, the Depreciation is quicker and greater." In letters from France, Franklin explained its usefulness with great candor.¹⁷

This currency, as we manage it, is a wonderful Machine. It performs its Office when we issue it; it pays and clothes Troops, and provides Victuals and Ammunition; and when we are obliged to issue a Quantity excessive, it pays itself off by Depreciation. . . . But this Depreciation, tho' in some Circumstances inconvenient, has had the general good and great Effect of operating as a Tax, and perhaps the most equal of all Taxes, since it depreciated in the Hands of the Holders of Money; and thereby tax'd them in proportion to the Sums they held and the time they held it which generally is in proportion to Men's Wealth.

The well-known expression "Not Worth a Continental" which arose from the collapse in value of Continental Currency has always been used as a term of derision but the government officials (including Franklin) who skillfully planned the circulation of paper money were proud of that accomplishment against hopeless odds.

BANK OF NORTH AMERICA SCRIP

The final involvement of Franklin in money production was to help the Bank of North America solve the copper coinage crisis of July, 1789. The State-franchised private mints of Connecticut, Vermont, Massachusetts, and New Jersey had since 1785 coined immense quantities of unredeemable coppers which circulated at varying values far above their intrinsic worth. To this, additional quantities of private issues and English halfpence, genuine and counterfeit, had been recently im-

¹⁷ Letter to Samuel Cooper dated April 22, 1779; letter to Thomas Ruston dated October 9, 1780.

ported or secretly produced in America. When merchants hesitated to accept all of these coppers at customary rates the population panicked and small trade was paralyzed. At this point Franklin suggested to the Bank of North America which he had supported during its early difficulties, that the bank introduce small paper notes into circulation redeemable in specie with denominations of 1/90 and 3/90 of a Spanish dollar (equal respectively to one penny and three pence in Pennsylvania money of account). Franklin's son-in-law, Richard Bache, secured the bank's approval and

the issue was the first instance of any bank issuing paper money of so low a denomination. Franklin also furnished two reams of white rag paper with a marbled edge for printing these "tickets" as they were then often called. To complete the participation of the Franklin family, his grandson, Benjamin Franklin Bache, was selected as the printer.¹⁸

Thus Franklin devoted a full sixty years of his life to making money more plentiful.

¹⁸ Eric P. Newman, "Franklin and the Bank of North America," *The Numismatist* 69 (1956): pp. 1368-1370.

